FIG. 1

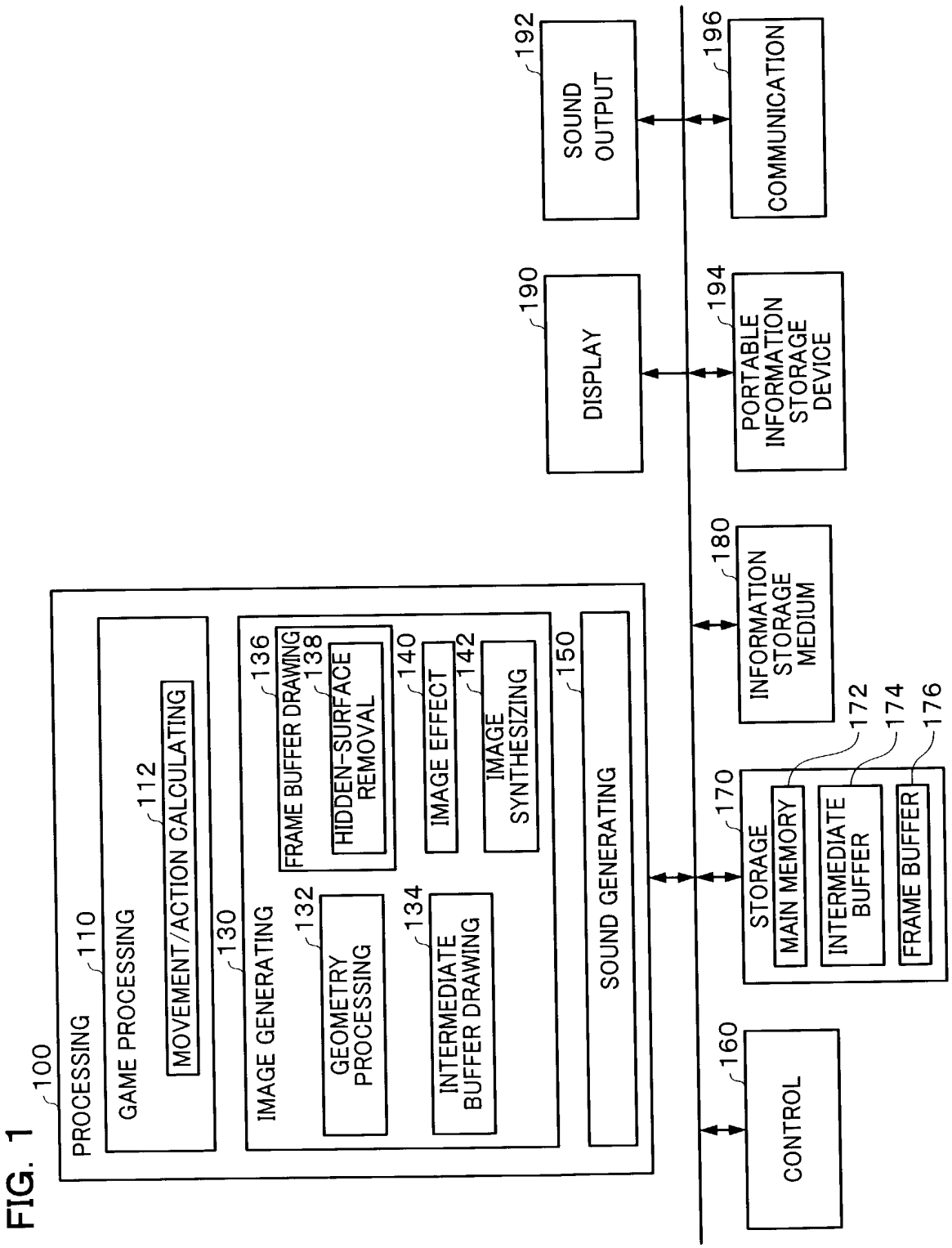

100
PROCESSING
110
GAME PROCESSING
112
MOVEMENT/ACTION CALCULATING
130
IMAGE GENERATING
132
GEOMETRY PROCESSING
134
INTERMEDIATE BUFFER DRAWING
136
FRAME BUFFER DRAWING
138
HIDDEN-SURFACE REMOVAL
140
IMAGE EFFECT
142
IMAGE SYNTHESIZING
150
SOUND GENERATING
160
CONTROL
170
STORAGE
MAIN MEMORY
172
INTERMEDIATE BUFFER
174
FRAME BUFFER
176
180
INFORMATION STORAGE MEDIUM
190
DISPLAY
192
SOUND OUTPUT
194
PORTABLE INFORMATION STORAGE DEVICE
196
COMMUNICATION

FIG. 2

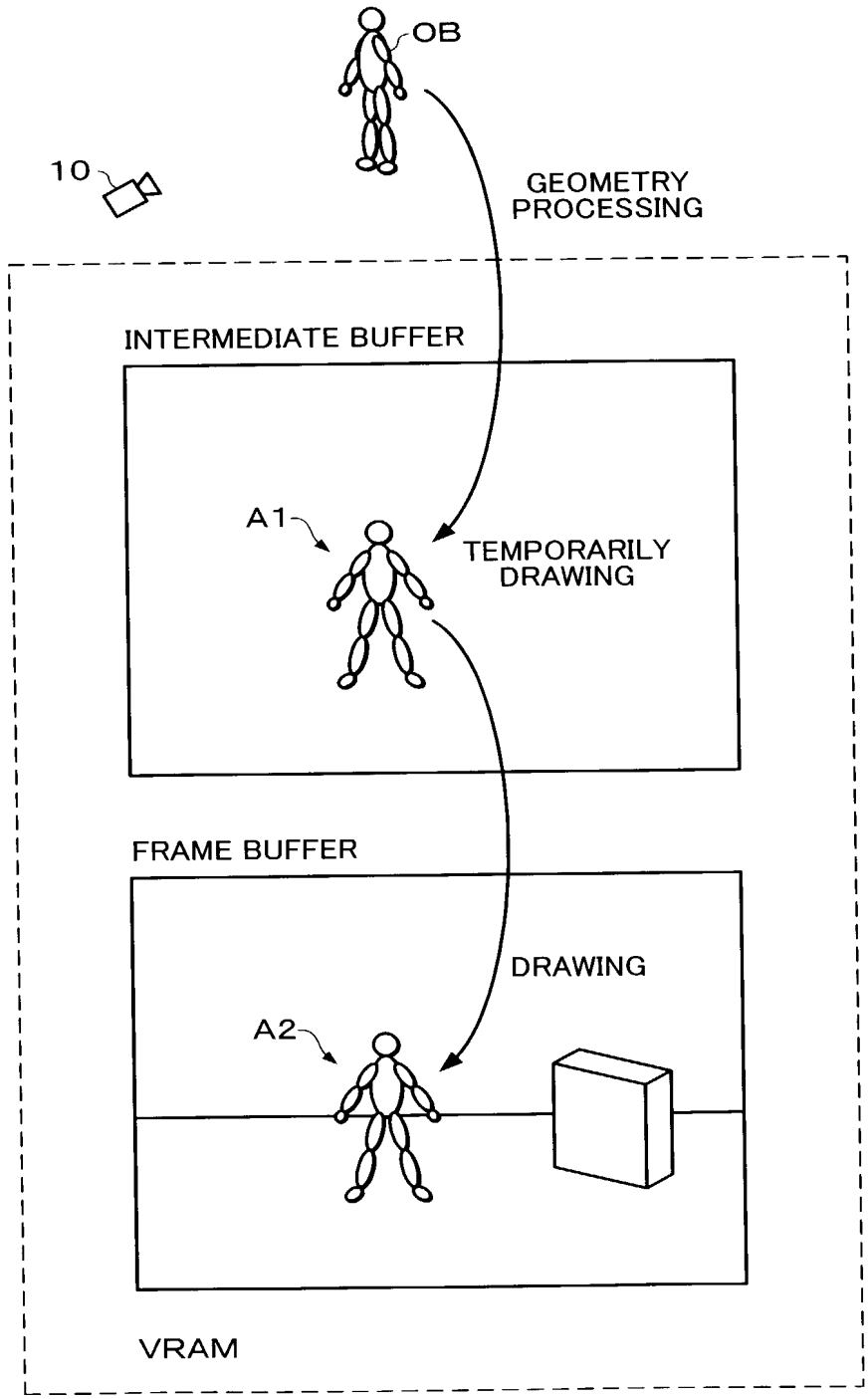

OB
10
GEOMETRY PROCESSING
INTERMEDIATE BUFFER
A1
TEMPORARILY DRAWING
FRAME BUFFER
DRAWING
A2
VRAM

FIG. 3

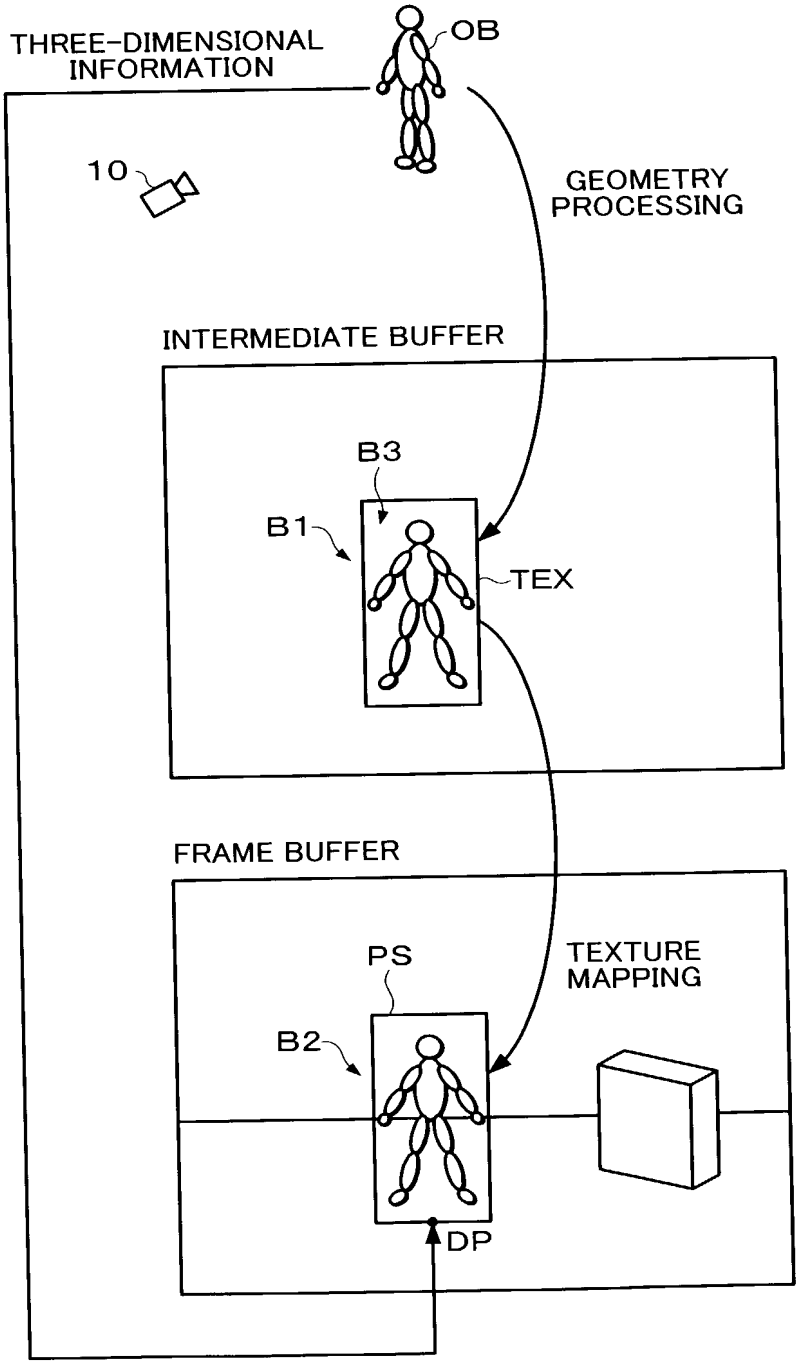

THREE-DIMENSIONAL INFORMATION
OB
10
GEOMETRY PROCESSING
INTERMEDIATE BUFFER
B3
B1
TEX
FRAME BUFFER
PS
TEXTURE MAPPING
B2
DP

FIG. 4

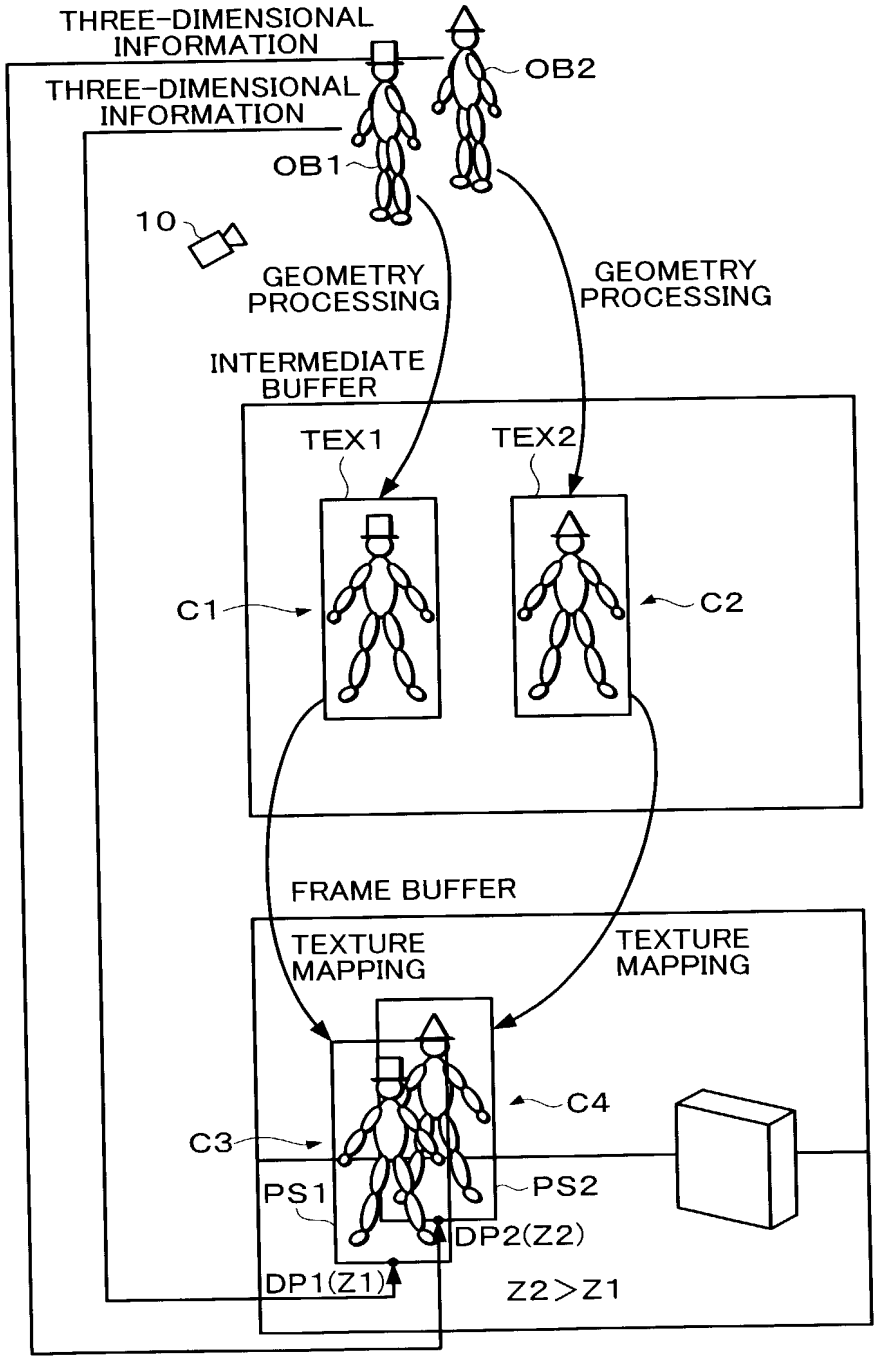

THREE-DIMENSIONAL INFORMATION
THREE-DIMENSIONAL INFORMATION
OB2
OB1
10
GEOMETRY PROCESSING
GEOMETRY PROCESSING
INTERMEDIATE BUFFER
TEX1
TEX2
C1
C2
FRAME BUFFER
TEXTURE MAPPING
TEXTURE MAPPING
C4
C3
PS1
PS2
DP2(Z2)
DP1(Z1)
Z2>Z1

FIG. 5

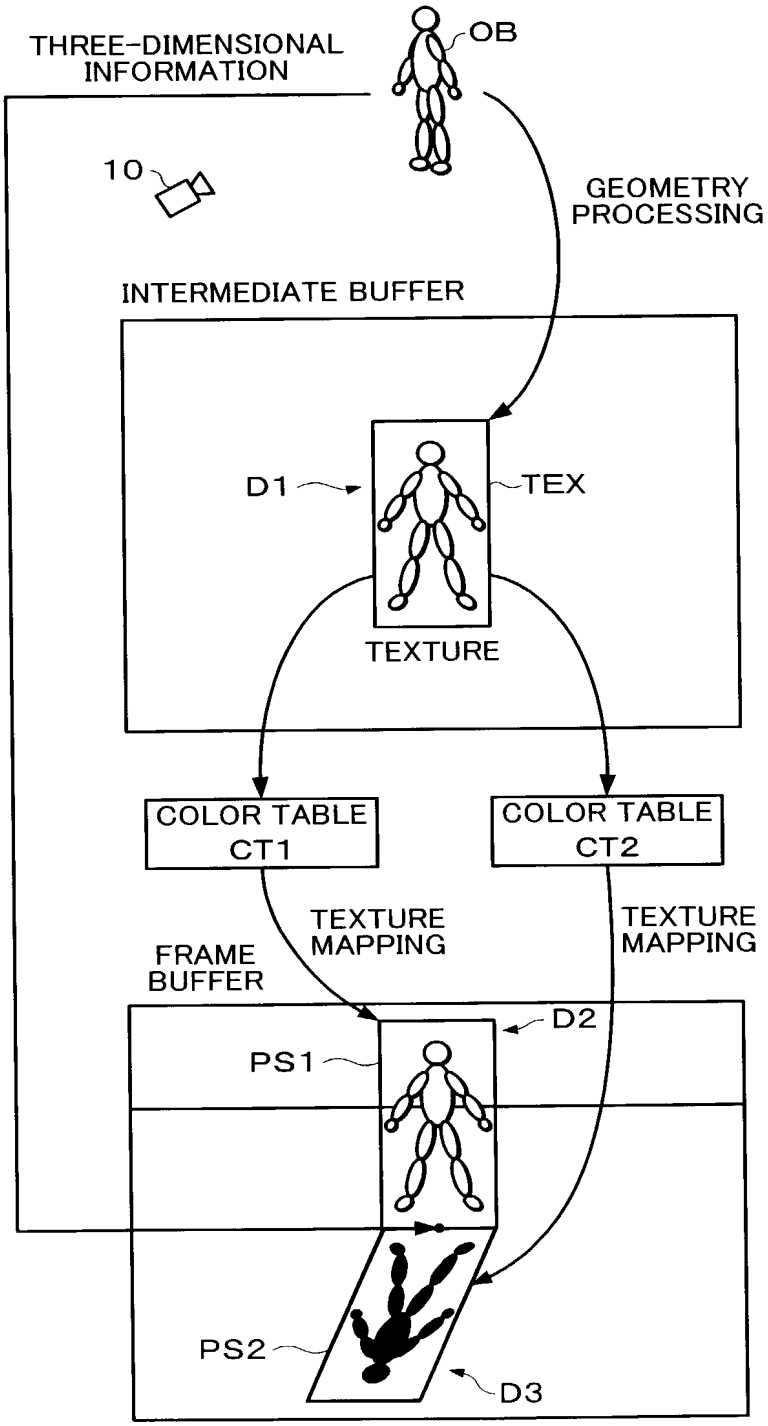
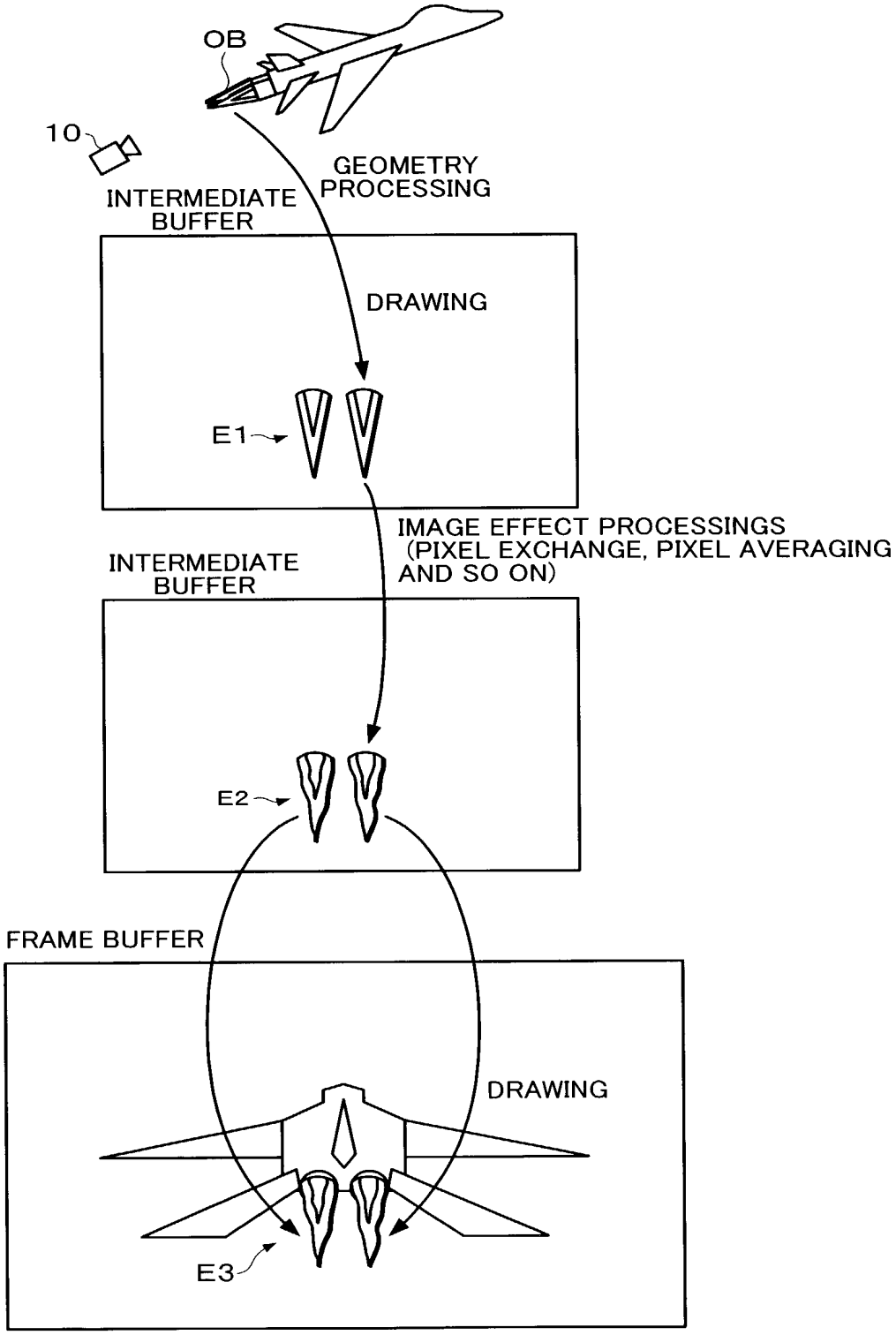

THREE-DIMENSIONAL INFORMATION
OB
10
GEOMETRY PROCESSING
INTERMEDIATE BUFFER
D1
TEX
TEXTURE
COLOR TABLE CT1
COLOR TABLE CT2
TEXTURE MAPPING
TEXTURE MAPPING
FRAME BUFFER
D2
PS1
PS2
D3

FIG. 6


OB
10
GEOMETRY PROCESSING
INTERMEDIATE BUFFER
DRAWING
E1
IMAGE EFFECT PROCESSINGS (PIXEL EXCHANGE, PIXEL AVERAGING AND SO ON)
INTERMEDIATE BUFFER
E2
FRAME BUFFER
DRAWING
E3

PIXEL EXCHANGE

FIG. 7A

A	B	C	D	E
F	G	H	I	J
K	L	M	N	O
P	Q	R	S	T
U	V	W	X	Y

FIG. 7B

A	B	C	D	E
F	G	R	I	J
K	L	M	N	O
P	Q	H	S	T
U	V	W	X	Y

FIG. 7C

A	B	C	D	E
F	G	R	I	Q
K	L	M	N	O
P	J	H	S	T
U	V	W	X	Y

PIXEL AVERAGING (OR DOT AVERAGING)

FIG. 8A

A11	A12	A13	A14	A15
A21	A22	A23	A24	A25
A31	A32	A33	A34	A35
A41	A42	A43	A44	A45
A51	A52	A53	A54	A55

FIG. 8B

BLENDING COEFFICIENT

	β	β	β	
	β	α	β	
	β	β	β	

FIG. 9

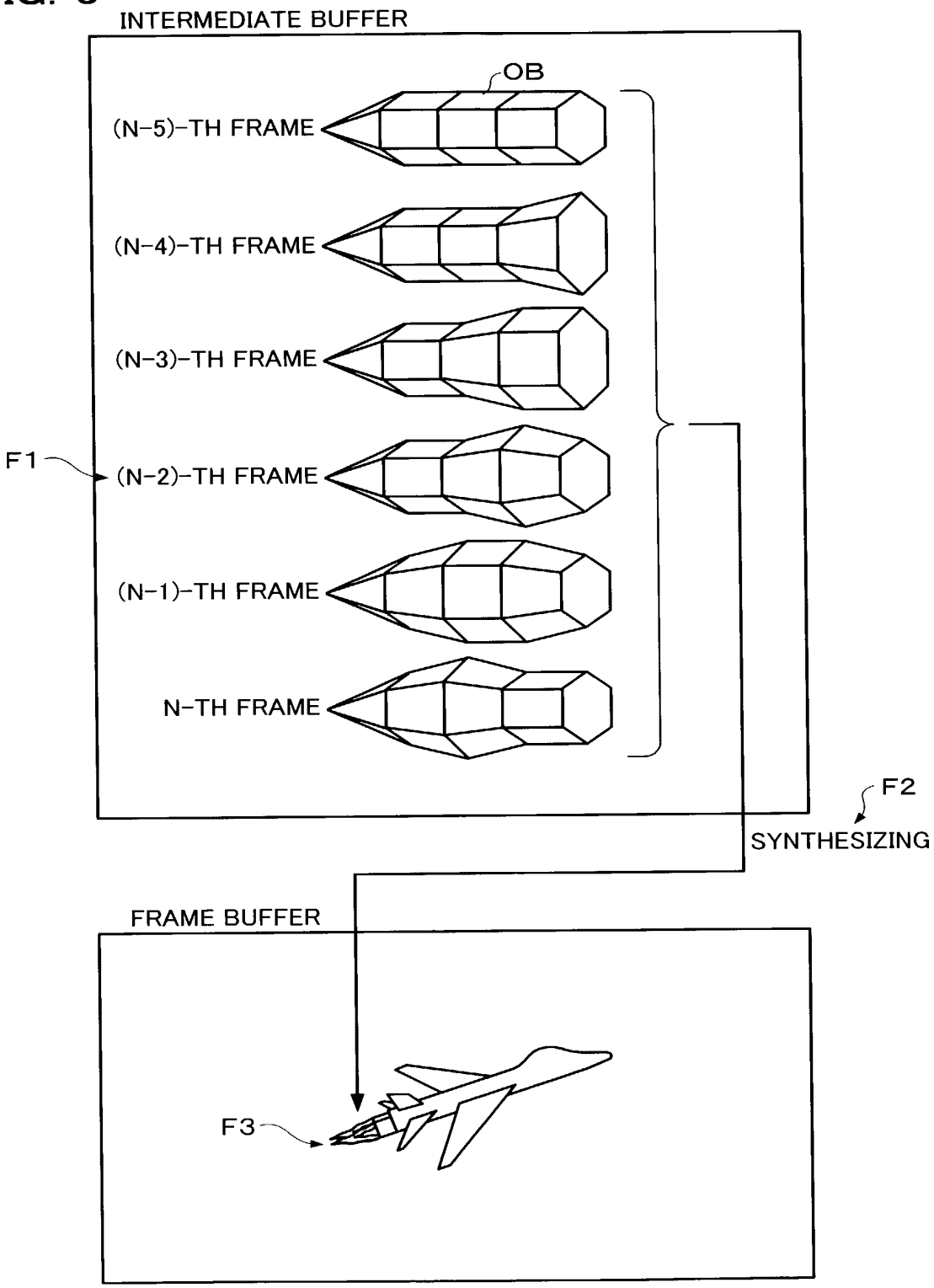

INTERMEDIATE BUFFER
OB
(N-5)-TH FRAME
(N-4)-TH FRAME
(N-3)-TH FRAME
F1
(N-2)-TH FRAME
(N-1)-TH FRAME
N-TH FRAME
F2
SYNTHESIZING
FRAME BUFFER
F3

FIG. 10

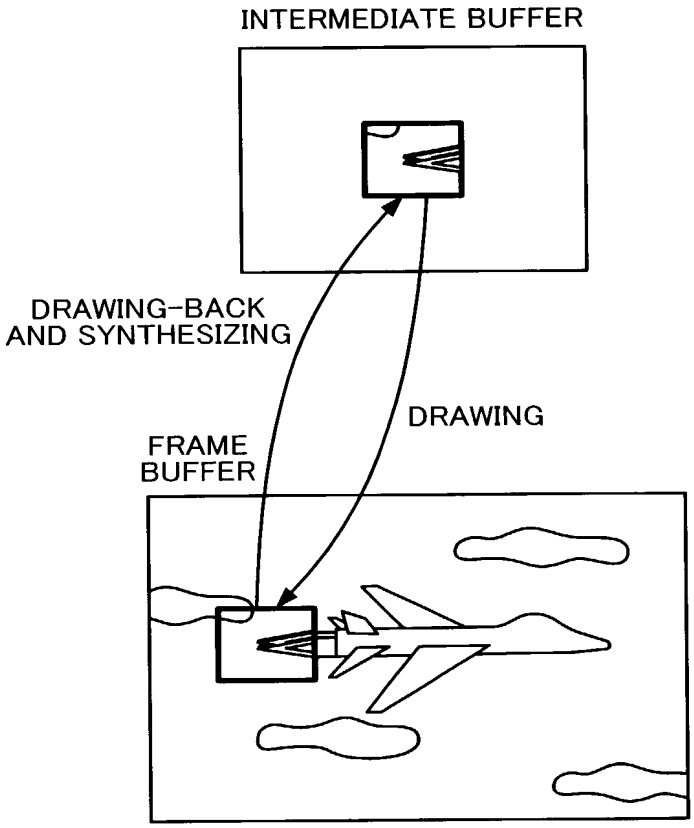

INTERMEDIATE BUFFER
DRAWING-BACK AND SYNTHESIZING
DRAWING
FRAME BUFFER

FIG. 11

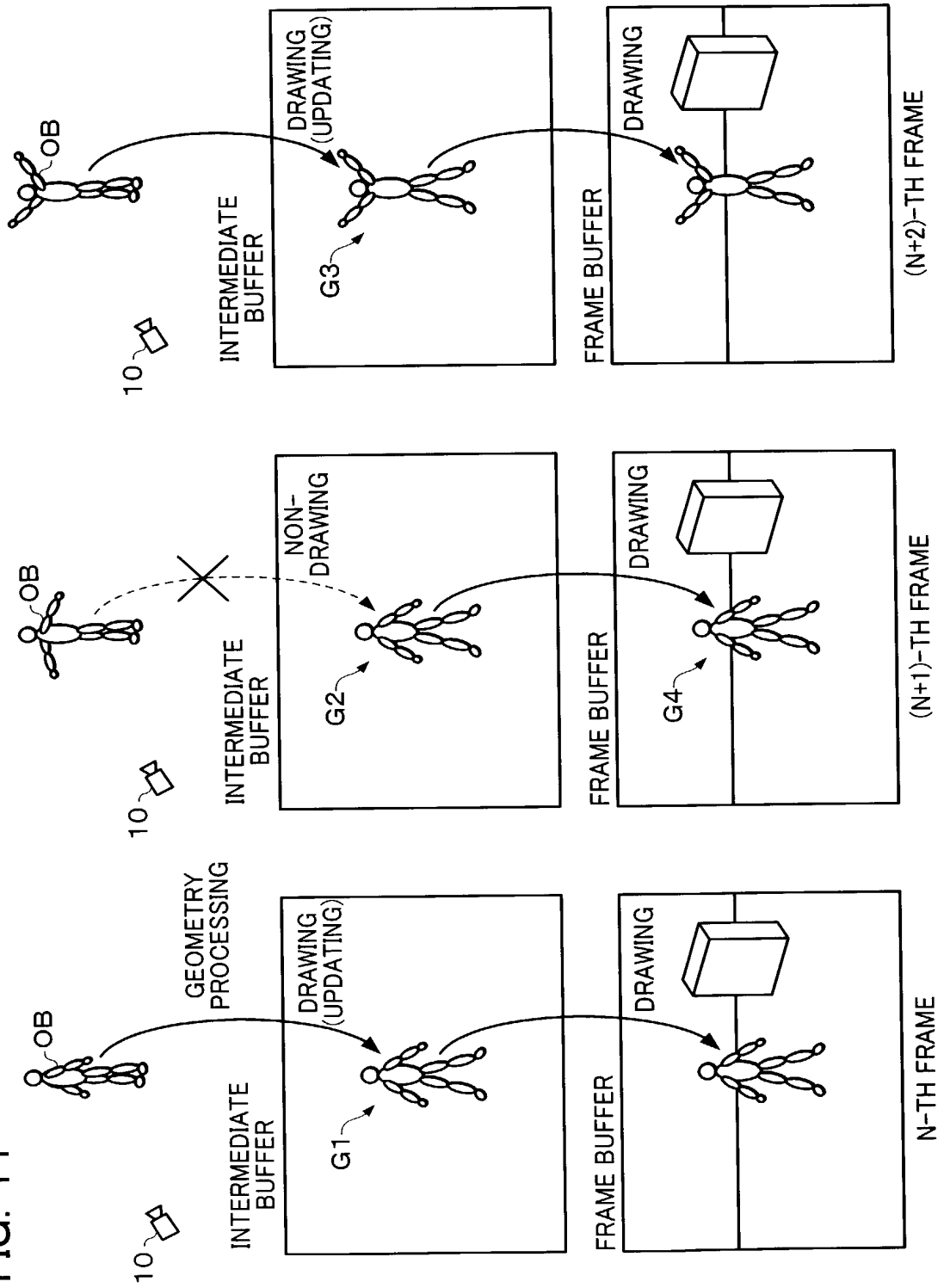

OB
GEOMETRY PROCESSING
DRAWING (UPDATING)
INTERMEDIATE BUFFER
G1
FRAME BUFFER
DRAWING
N-TH FRAME
10
OB
NON-DRAWING
INTERMEDIATE BUFFER
G2
FRAME BUFFER
DRAWING
G4
(N+1)-TH FRAME
10
OB
DRAWING (UPDATING)
INTERMEDIATE BUFFER
G3
FRAME BUFFER
DRAWING
(N+2)-TH FRAME
10

FIG. 12

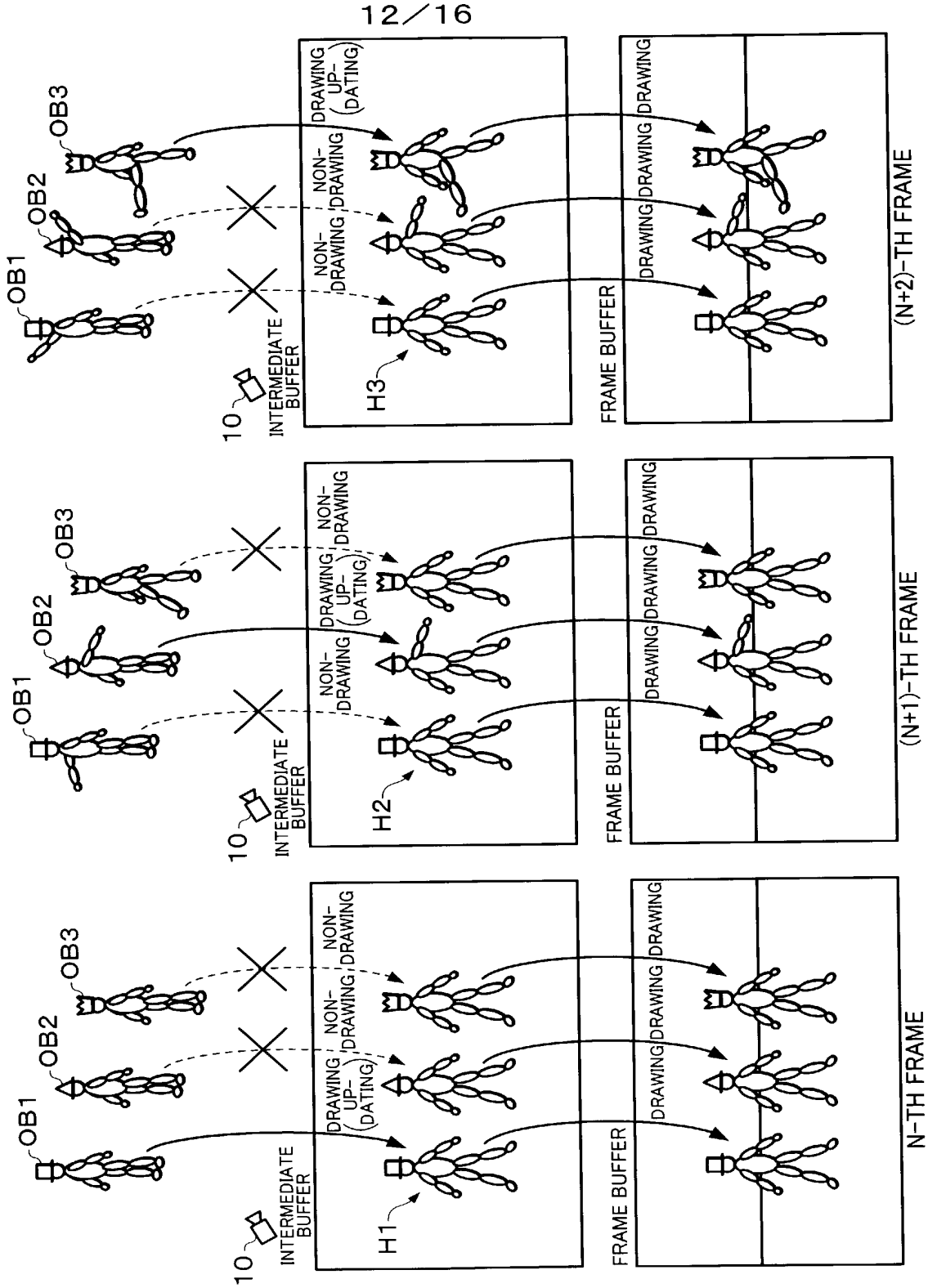

OB1
OB2
OB3
10
INTERMEDIATE BUFFER
DRAWING (UP-DATING)
NON-DRAWING
H1
H2
H3
FRAME BUFFER
DRAWING
N-TH FRAME
(N+1)-TH FRAME
(N+2)-TH FRAME

FIG. 13

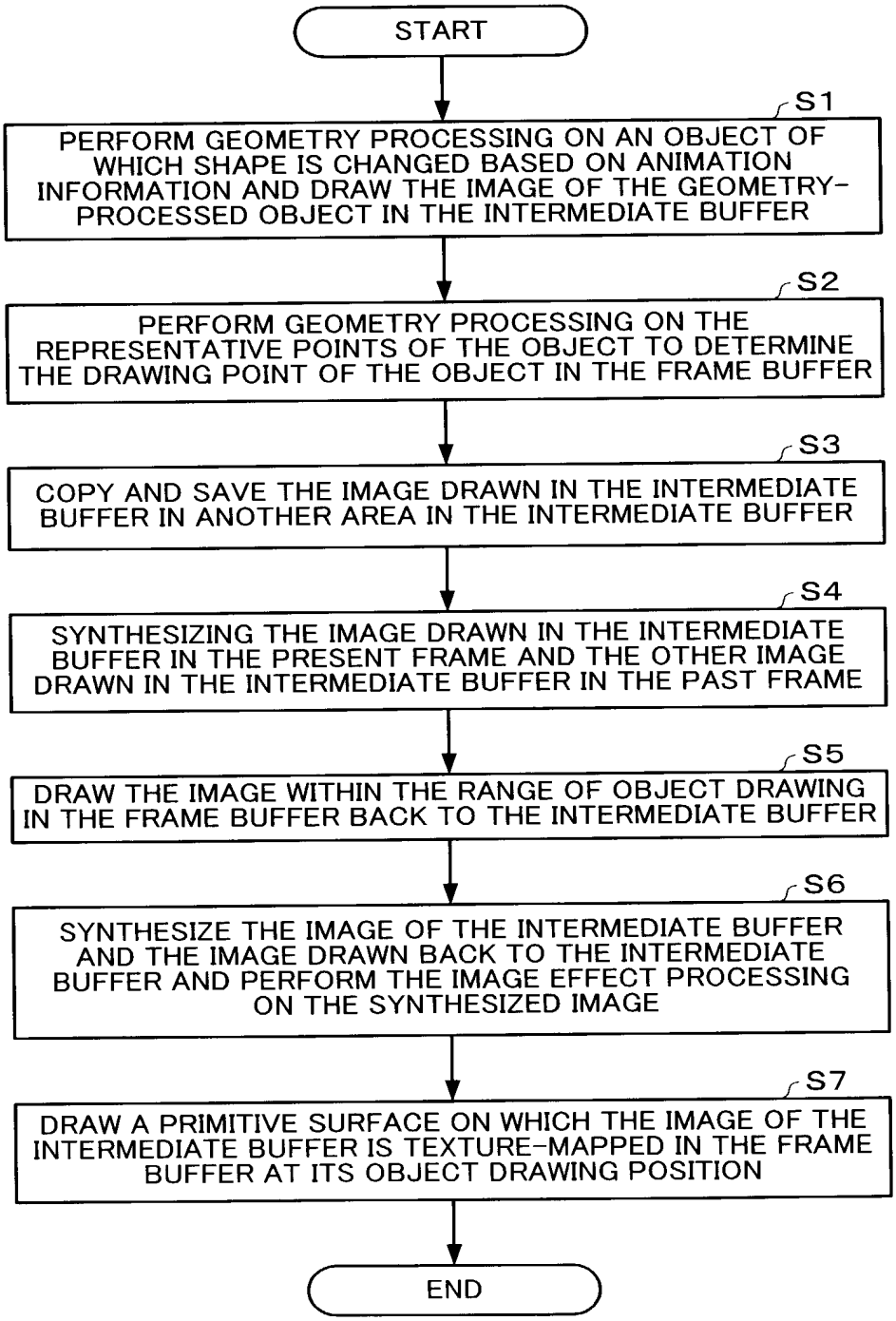

START
S1
PERFORM GEOMETRY PROCESSING ON AN OBJECT OF WHICH SHAPE IS CHANGED BASED ON ANIMATION INFORMATION AND DRAW THE IMAGE OF THE GEOMETRY-PROCESSED OBJECT IN THE INTERMEDIATE BUFFER
S2
PERFORM GEOMETRY PROCESSING ON THE REPRESENTATIVE POINTS OF THE OBJECT TO DETERMINE THE DRAWING POINT OF THE OBJECT IN THE FRAME BUFFER
S3
COPY AND SAVE THE IMAGE DRAWN IN THE INTERMEDIATE BUFFER IN ANOTHER AREA IN THE INTERMEDIATE BUFFER
S4
SYNTHESIZING THE IMAGE DRAWN IN THE INTERMEDIATE BUFFER IN THE PRESENT FRAME AND THE OTHER IMAGE DRAWN IN THE INTERMEDIATE BUFFER IN THE PAST FRAME
S5
DRAW THE IMAGE WITHIN THE RANGE OF OBJECT DRAWING IN THE FRAME BUFFER BACK TO THE INTERMEDIATE BUFFER
S6
SYNTHESIZE THE IMAGE OF THE INTERMEDIATE BUFFER AND THE IMAGE DRAWN BACK TO THE INTERMEDIATE BUFFER AND PERFORM THE IMAGE EFFECT PROCESSING ON THE SYNTHESIZED IMAGE
S7
DRAW A PRIMITIVE SURFACE ON WHICH THE IMAGE OF THE INTERMEDIATE BUFFER IS TEXTURE-MAPPED IN THE FRAME BUFFER AT ITS OBJECT DRAWING POSITION
END

FIG. 14

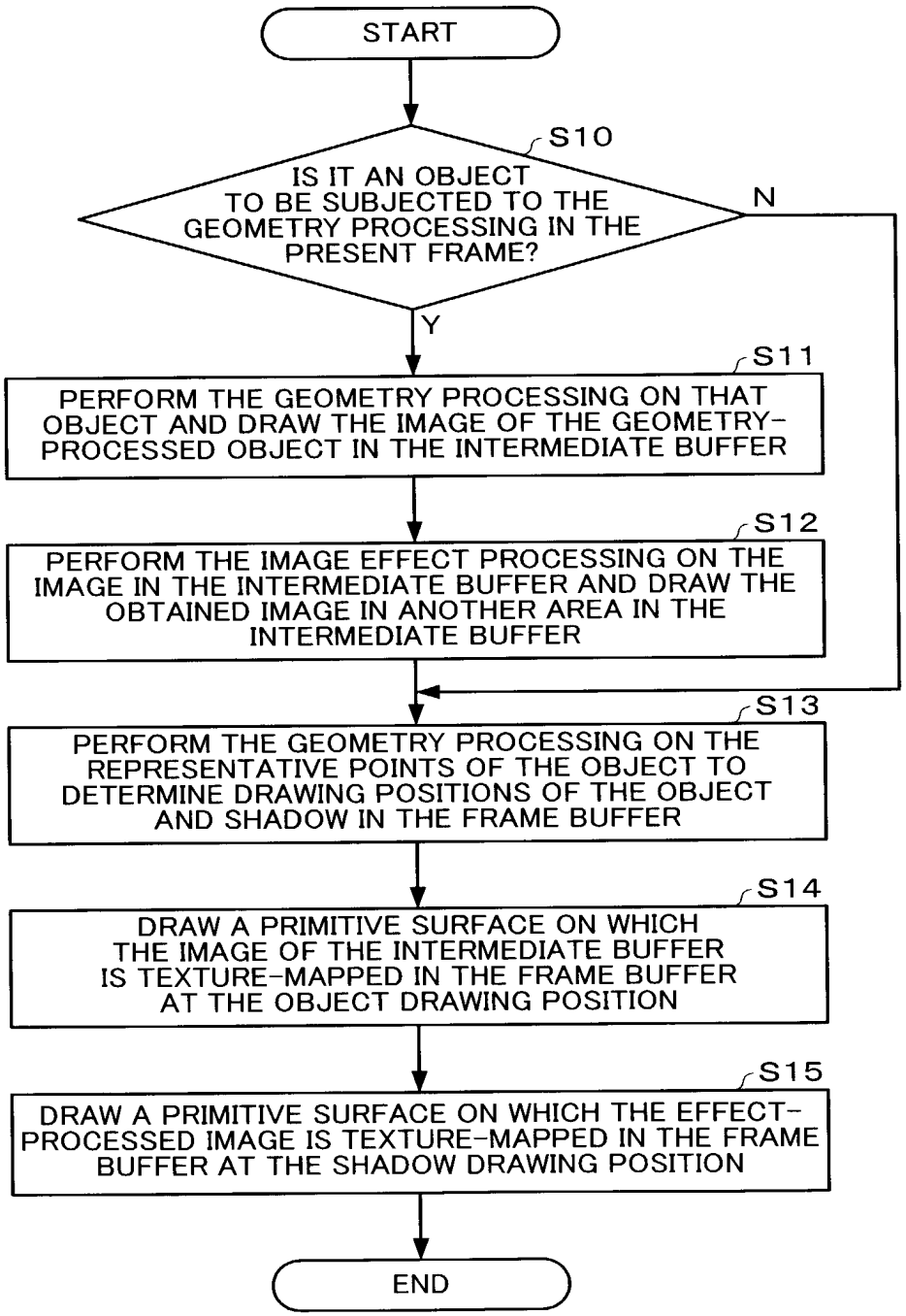

START
S10
IS IT AN OBJECT TO BE SUBJECTED TO THE GEOMETRY PROCESSING IN THE PRESENT FRAME?
N
Y
S11
PERFORM THE GEOMETRY PROCESSING ON THAT OBJECT AND DRAW THE IMAGE OF THE GEOMETRY-PROCESSED OBJECT IN THE INTERMEDIATE BUFFER
S12
PERFORM THE IMAGE EFFECT PROCESSING ON THE IMAGE IN THE INTERMEDIATE BUFFER AND DRAW THE OBTAINED IMAGE IN ANOTHER AREA IN THE INTERMEDIATE BUFFER
S13
PERFORM THE GEOMETRY PROCESSING ON THE REPRESENTATIVE POINTS OF THE OBJECT TO DETERMINE DRAWING POSITIONS OF THE OBJECT AND SHADOW IN THE FRAME BUFFER
S14
DRAW A PRIMITIVE SURFACE ON WHICH THE IMAGE OF THE INTERMEDIATE BUFFER IS TEXTURE-MAPPED IN THE FRAME BUFFER AT THE OBJECT DRAWING POSITION
S15
DRAW A PRIMITIVE SURFACE ON WHICH THE EFFECT-PROCESSED IMAGE IS TEXTURE-MAPPED IN THE FRAME BUFFER AT THE SHADOW DRAWING POSITION
END

FIG. 15

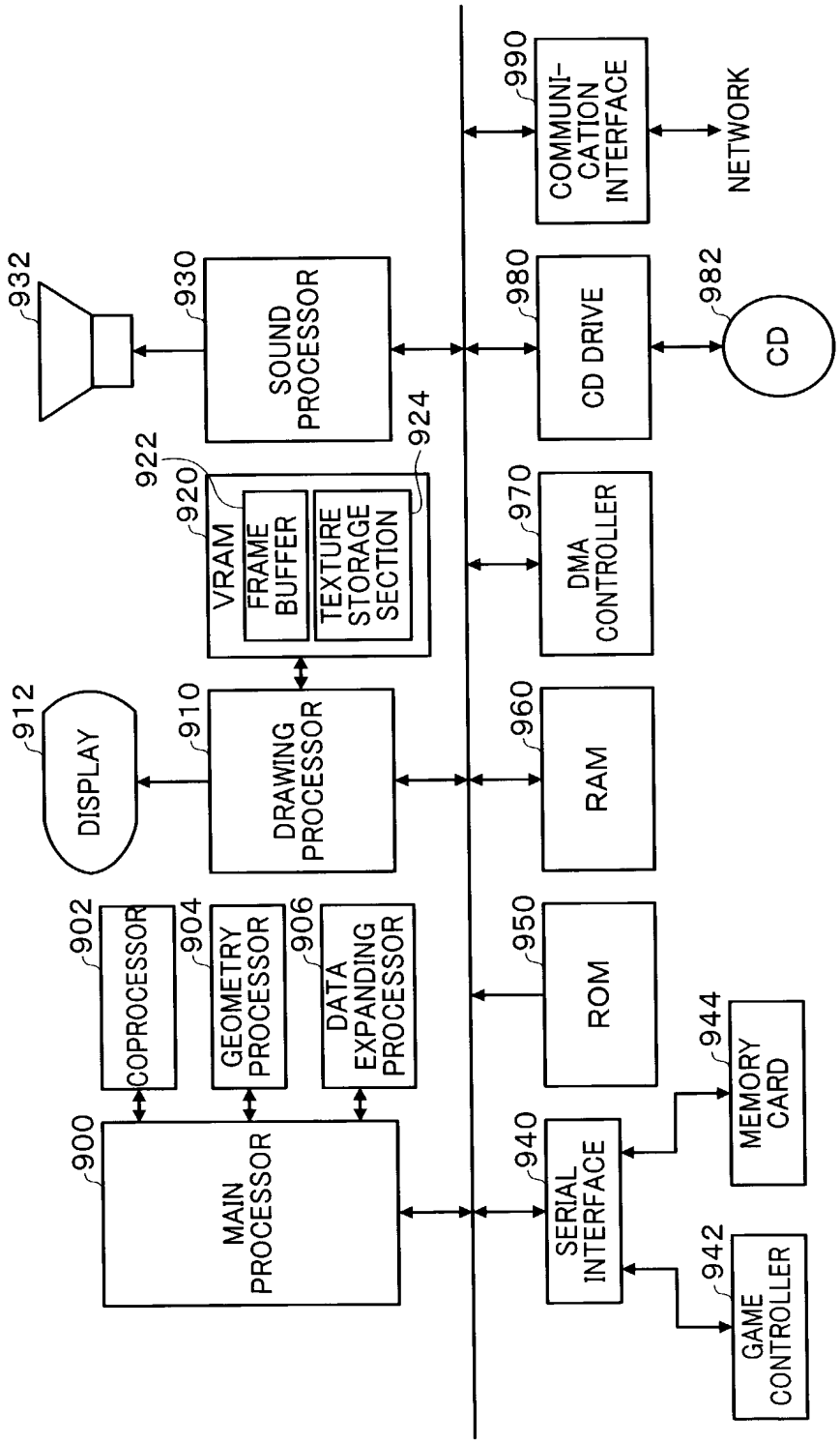

900
MAIN PROCESSOR
902
COPROCESSOR
904
GEOMETRY PROCESSOR
906
DATA EXPANDING PROCESSOR
910
DRAWING PROCESSOR
912
DISPLAY
920
VRAM
FRAME BUFFER
924
TEXTURE STORAGE SECTION
922
930
SOUND PROCESSOR
932
940
SERIAL INTERFACE
942
GAME CONTROLLER
944
MEMORY CARD
950
ROM
960
RAM
970
DMA CONTROLLER
980
CD DRIVE
982
CD
990
COMMUNI-CATION INTERFACE
NETWORK

FIG. 16A

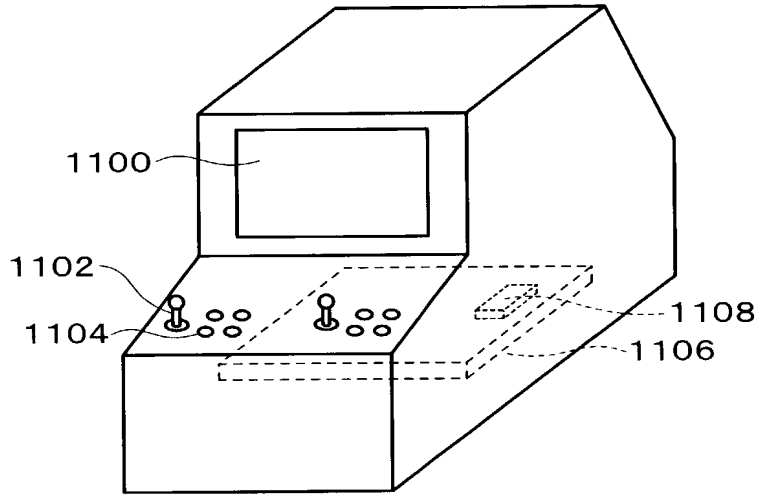


FIG. 16B

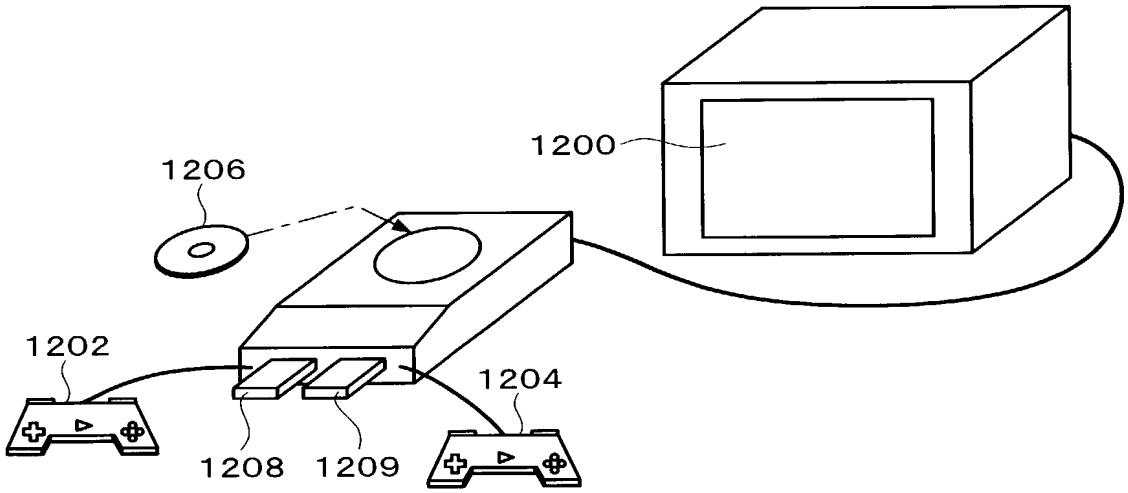
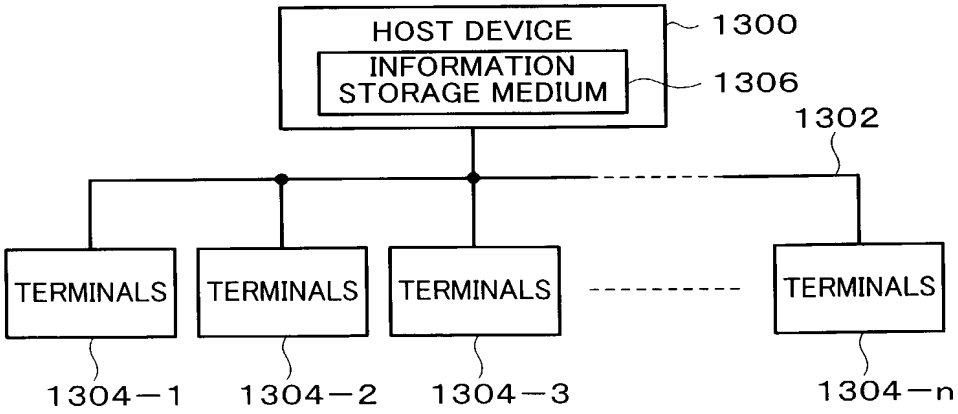



FIG. 16C